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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,004	09/11/2000	Kazuo Toraichi	A-371	4200

802 7590 06/30/2005

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EXAMINER	
DO, CHAT C	

ART UNIT	PAPER NUMBER
2193	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/601,004	TORAICHI ET AL.	
	Examiner	Art Unit	
	Chat C. Do	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2005 and 20 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) *5 and 7* is/are withdrawn from consideration.

5)☒ Claim(s) *6* is/are allowed.

6)☒ Claim(s) *1,2 and 8* is/are rejected.

7)☒ Claim(s) *3 and 4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *attached herein* .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Amendment filed 09/24/2004 and 04/25/2005.

2. Claims 1-8 are pending in this application. Claims 1 and 6-8 are independent claims. In Amendment, claim 1 is amended and claims 5, 7 are withdrawn. This Office Action is made non-final after a RCE filed 04/25/2005.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 2, the term "can be" in line 3 is a relative term which renders the claim indefinite. The term "can be" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For examination purposes, the examiner considers the phrase "can be differentiable" as "is capable of differentiable".

Re claim 8, the term "can be" also exists in line 8. Thus, claim 8 is also rejected under the same rationale as cited in the rejection of rejected claim 2 above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being obvious over Masaru et al. ("A Smooth Signal Generator Based on Quadratic B-spline Functions") in view of Maltsev et al. (U.S. 6,018,597).

Re claim 1, Masaru et al. disclose a two variable data interpolation system (e.g. abstract, Introduction section lines 16-18 page 1252, Preliminaries section lines 1-5 page 1252, wherein two variable data would be h and k) for processing data (e.g. discrete-time signal in Preliminaries section line 3 page 1252), wherein an value between a plurality of discrete data values is interpolated by performing convolution operation (e.g. equations 1-6 page 1252, particularly equations 3-4 for convolution) corresponding to the plurality of discrete data positioned at equal intervals (e.g. Preliminaries section lines 1-4 page 1252) in a two dimensional space using a sampling function (e.g. phi-function as seen n Figure 1 in page 1253 and equation 2 in page 1252) that is differentiable finite times (e.g. right column in page 1253) and has values of a local support (e.g. Figure 1 and equation 2 wherein parameter h and l are normalized or set to 1, then equation 2 will have specific finite values in a range [-3/2,3/2] and zero value outside that range; left column lines 1-5 page 1253). Masaru et al. fail to disclose that the data is image data. However, Maltsev et al. disclose in Figure 4 an interpolation process of an image data (e.g. 102-106 in

Figure 4) utilizing convolution. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add image data into the interpolation system as seen in Maltsev et al.'s Figure into Masaru et al.'s invention because it would enable to efficiently reduce or minimize errors and noise in modifying image data (e.g. col. 1 lines 32-45).

Re claim 2, Masaru et al. further disclose the sampling function is a function that can be differentiated only once over a whole region (e.g. capable of differentiated only once over a region due to smooth function, Introduction section lines 16-18 page 1252 and right column in page 1253).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being obvious over Masaru et al. ("A Smooth Signal Generator Based on Quadratic B-spline Functions") in view of Druck (U.S. 6,477,553).

Re claim 8, Masaru et al. disclose a two variable data interpolation system (e.g. abstract, Introduction section lines 16-18 page 1252, Preliminaries section lines 1-5 page 1252, wherein two variable data would be h and k), comprising: sampling function operating unit (e.g. Figure 1 and right column in page 1252) for calculating a value of the sampling function (e.g. phi-function as seen n Figure 1 in page 1253 and equation 2 in page 1252) that can be differentiated finite times (e.g. right column in page 1253) and has values of local support for each of a plurality of discrete data extracted in this manner (e.g. Figure 1 and equation 2 wherein parameter h and l are normalized or set to 1, then equation 2 will have specific finite values in a range [-3/2,3/2] and zero value outside that

range; left column lines 1-5 page 1253), based on distance between the data interpolating position and discrete data (e.g. Preliminaries section lines 1-15 page 1252); and convolution operating unit (e.g. equations 3-4 in right column page 1252) for obtaining a value of the data interpolating position by performing convolution operation through adding values of the sampling function that are calculated by the sampling function operating unit and correspond the plurality of discrete data respectively (e.g. equation 4). Masaru et al. disclose the input discrete-time data for interpolation, but fail to expressively disclose discrete data extracting unit for extracting a plurality of discrete data that exist within a predetermined range around a data interpolating position that becomes an object of interpolation operation. However, Druck discloses in Figure 5 the discrete data extracting unit for extracting a plurality of discrete data that exist within a predetermined range around a data interpolating position that becomes an object of interpolation operation (e.g. col. 4 lines 35-43). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the discrete data extracting unit for extracting a plurality of discrete data that exist within a predetermined range around a data interpolating position that becomes an object of interpolation operation as seen in Druck's invention into Masaru et al.'s invention because it would enable to easily obtain and modify the discrete data for used in subsequence processes.

Allowable Subject Matter

8. Claim 6 is allowed.

9. Claims 3-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is an examiner's statement of reasons for allowance:

The prior art of records fails to disclose or render an obviouness of a system for interpolating data by performing convolution operation at equal intervals in a two dimensional space using a sampling function that is differentiable finite times and has values of a local support wherein the sampling function enclosing a third order B-spline function F(t) as $-F(t+1/2)/4 + F(t) - F(t-1/2)/4$ as seen in dependent claim 3 and independent claim 6.

The closest found prior arts are Masaru et al. ("A Smooth Signal Generator Based on Quadratic B-spline Functions"), Maltsev et al. (U.S. 6,018,597), and Druck (U.S. 6,477,553). Masaru et al. disclose a system for interpolating data by performing convolution operation at equal intervals in a two dimensional space using a sampling function that is differentiable finite times and has values of a local support. However, an individual reference or a combination of references fails to disclose the sampling function enclosing a third order B-spline function F(t) as $-F(t+1/2)/4 + F(t) - F(t-1/2)/4$ as seen above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

11. Applicant's arguments with respect to claims 1-2 and 8 have been considered but are moot in view of the new ground(s) of rejection.

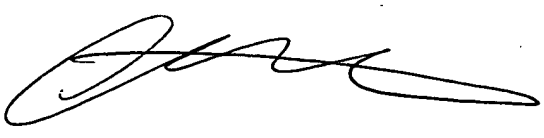
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193



June 25, 2005